

**CLAIMS**

1. A gasification system comprising:  
a gasification furnace for gasifying a combustible to produce a combustible  
5 gas;  
a combustion furnace for combusting char and/or tar produced by  
gasification in said gasification furnace; and  
a return line for returning a combustion gas discharged from said  
combustion furnace to said gasification furnace and said combustion furnace.  
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2. The gasification system as recited in claim 1, wherein oxygen is added to  
the combustion gas to be returned to said combustion furnace.
3. The gasification system as recited in claim 1, wherein steam or inert gas  
15 is supplied to said gasification furnace.
4. The gasification system as recited in claim 1, wherein the combustion  
gas is supplied to a portion downstream of said gasification furnace.
- 20 5. The gasification system as recited in claim 1, wherein the combustion  
gas to be returned to said gasification furnace has an oxygen concentration of 5 %  
or less.
6. The gasification system as recited in claim 1, wherein said gasification  
25 furnace has a temperature of 350 to 950°C.
7. The gasification system as recited in claim 1, wherein said combustion  
furnace has a temperature of 600 to 1000°C.
- 30 8. The gasification system as recited in claim 1, further comprising a  
slagging combustion furnace for melting ash by using a portion of the combustible  
gas produced by gasification in said gasification furnace.

9. The gasification system as recited in claim 8, wherein a combustion gas discharged from said slagging combustion furnace is returned to said combustion furnace.

5           10. The gasification system as recited in claim 1, further comprising a water spray gas cooler for spraying water on the combustion gas discharged from said combustion furnace.

10           11. The gasification system as recited in claim 1, further comprising:  
a scrubber disposed in a line of the combustible gas discharged from said gasification furnace; and  
a water spray gas cooler for spraying water discharged from said scrubber on the combustion gas discharged from said combustion furnace.

15           12. The gasification system as recited in claim 1, further comprising a fluidizing gas heater for exchanging heat between the combustion gas discharged from said combustion furnace and the combustion gas to be returned to said gasification furnace and said combustion furnace.

20           13. The gasification system as recited in claim 1, further comprising a high-temperature furnace for pyrolyzing tar in the combustible gas discharged from said gasification furnace.

25           14. The gasification system as recited in claim 1, wherein said gasification furnace comprises a fluidized-bed furnace having a bed material including at least one of silica sand and catalyst particles.

30           15. The gasification system as recited in claim 1, wherein said combustion furnace comprises a fluidized-bed furnace having a bed material including at least one of silica sand and catalyst particles.

16. The gasification system as recited in claim 1, further comprising a gas cooling apparatus for cooling the combustible gas discharged from said gasification furnace to remove moisture from the combustible gas.

5           17. The gasification system as recited in claim 1, further comprising a gas cooling apparatus for cooling the combustion gas discharged from said combustion furnace to remove moisture from the combustion gas.

10           18. A gasification system comprising:  
            an integrated gasification furnace including:  
                a gasification chamber for gasifying a combustible to produce a  
                combustible gas; and  
                a combustion chamber for combusting char and/or tar produced by  
                gasification in said gasification chamber; and  
15           a return line for returning a combustion gas discharged from said  
            combustion chamber to said gasification chamber and said combustion chamber.

20           19. The gasification system as recited in claim 18, wherein oxygen is added  
            to the combustion gas to be returned to said combustion chamber.

            20. The gasification system as recited in claim 18, wherein steam or inert  
            gas is supplied to said gasification chamber.

25           21. The gasification system as recited in claim 18, wherein the combustion  
            gas is supplied to a portion downstream of said gasification chamber.

            22. The gasification system as recited in claim 18, wherein the combustion  
            gas to be returned to said gasification chamber has an oxygen concentration of 5 %  
            or less.  
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            23. The gasification system as recited in claim 18, wherein said gasification  
            chamber has a temperature of 350 to 950°C.

24. The gasification system as recited in claim 18, wherein said combustion chamber has a temperature of 600 to 1000°C.

5 25. The gasification system as recited in claim 18, further comprising a slagging combustion furnace for melting ash by using a portion of the combustible gas produced by gasification in said gasification chamber.

10 26. The gasification system as recited in claim 25, wherein a combustion gas discharged from said slagging combustion chamber is returned to said combustion chamber.

15 27. The gasification system as recited in claim 18, further comprising a water spray gas cooler for spraying water on the combustion gas discharged from said combustion chamber.

28. The gasification system as recited in claim 18, further comprising:  
a scrubber disposed in a line of the combustible gas discharged from said gasification chamber; and  
a water spray gas cooler for spraying water discharged from said scrubber  
20 on the combustion gas discharged from said combustion chamber.

25 29. The gasification system as recited in claim 18, further comprising a fluidizing gas heater for exchanging heat between the combustion gas discharged from said combustion chamber and the combustion gas to be returned to said gasification chamber and said combustion chamber.

30 30. The gasification system as recited in claim 18, further comprising a high-temperature furnace for pyrolyzing tar in the combustible gas discharged from said gasification chamber.

31. The gasification system as recited in claim 18, wherein said gasification chamber comprises a fluidized-bed furnace having a bed material including at least one of silica sand and catalyst particles.

32. The gasification system as recited in claim 18, wherein said combustion chamber comprises a fluidized-bed furnace having a bed material including at least one of silica sand and catalyst particles.

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33. The gasification system as recited in claim 18, further comprising a gas cooling apparatus for cooling the combustible gas discharged from said gasification chamber to remove moisture from the combustible gas.

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34. The gasification system as recited in claim 18, further comprising a gas cooling apparatus for cooling the combustion gas discharged from said combustion chamber to remove moisture from the combustion gas.